What is claimed is:

1. An architecture for robot intelligence comprising:

a sensory database comprising at least one record, each record
representing a direction from the robot and capable of storing a sensor
signal;

a behavior database comprising a least one record, each record
representing a behavior capable of being performed by the robot;

an attention agent for identifying a focus record in the sensory database;
and

a behavior agent for selecting a behavior from the behavior database, the
selection based, in part, on the focus record.

2. The architecture of claim 1 further comprising an sensory agent for storing
the sensor signal into the sensory database record corresponding to the
spatial direction of the sensor signal.

3. The architecture of claim 2 wherein the sensory agent stores a datum
representing a time stamp associated with the sensory signal into the
sensory database.

4. The architecture of claim 3 further comprising a coincidence agent for
detecting temporal coincidence of a first sensor signal and a second sensor
signal when the first sensor signal time stamp does not equal the second
sensor time stamp.

5. An adaptive autonomous robot situated in an environment, the robot
comprising:

an actuator;

a sensory processing unit;

a short term memory module containing a representation of the environment
centered around the robot, the representation based on data provided
by the sensory processing unit;

a long term memory module containing a behavior, each behavior

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comprising a command to the actuator, a sensory pre-condition, and a sensory post-condition;

an active mode wherein the actuator is responsive to the actuator command from a behavior, the behavior selected such that the sensory post-condition of a preceding behavior is linked to the sensory precondition of the behavior; and

a dream mode wherein the actuator is disabled and a new behavior is added to the long term memory module based, in part, on the data provided by the sensory processing unit and on the behaviors stored in the long term memory module.

6. The robot of claim 5 further comprising a training mode wherein the robot completes a task by tele-operation while storing the data provided by the sensory processing unit in the short term memory module followed by a transition to the dream mode after completion of the task.

7. A data structure stored on a computer-readable medium, the data structure representing a behavior in an adaptive autonomous robot performing a task, the robot characterized by a state vector, the state vector comprised of at least one sensor signal and at least one actuator signal, the data structure comprising:

a pre-condition state vector representing a state of the robot;

a post-condition state vector representing a state of the robot after the pre-condition state vector;

an activation term characterizing the data structure;

a link to another data structure, the another data structure characterized by a pre-condition state vector that is distinct from the post-condition state vector of the data structure; and

a link probability based, in part, on the pre-condition state vector of the another data structure and on the post-condition state vector of the data structure.

8.	The data structure of claim 7 wherein the activation term is determined in part by the task.

9.	The data structure of claim 7 wherein the activation term is modified based in part on the success of the task.

5	10.	The data structure of claim 7 wherein the command to the actuator is an element of the vector difference of the post-condition state vector and the pre-condition state vector.

11.	A method for training an adaptive autonomous robot to perform a task, the robot configured to sense a state of the robot and the environment

10	surrounding the robot, the method comprising the steps of:

(a)	completing the task by teleoperation;

(b)	recording the robot's sensory information during teleoperation;

(c)	identifying an episode based on the recorded sensory information;

(d)	creating an exemplar episode based on at least one episode;

15	(e)	creating a behavior, the behavior comprising the exemplar episode and a link to a succeeding behavior such that the execution of the linked behaviors complete the task without teleoperation.

12.	A method of locating an object previously identified by an autonomous robot moving in an environment, the method comprising the steps of:

20	storing the object and the direction of the object relative to the robot;

recording the movement of the robot after the object is identified;

calculating the direction of the object based on the stored data structure and the recorded movement of the robot; and

locating the object by storing a tag in a short term memory according to the

25	calculated direction of the object.

13.	A method of creating new behavior sequences in an adaptive autonomous robot, the robot comprising an actuator, a short term memory module, and a long term memory module, the long term memory module including at least one behavior, the behavior including an actuator command and a sensory

30	state vector, the method comprising the steps of:

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disabling the actuator;

creating a new behavior based on the contents of the short term memory module; and

forming a link between the new behavior and an existing behavior stored in long term memory based on the sensory state vector of the new behavior and the sensory state vector of the behavior stored in long term memory.

14. The method of claim 13 wherein the link is characterized by an activation term depending on a distance between the sensory state vector of the new behavior and the sensory state vector of the existing behavior.

15. The method of claim 14 wherein the activation term includes a component that depends on a history of the new behavior.

16. The method of claim 13 wherein the link depends on an assigned task provided to the robot.

17. A data structure stored on a computer-readable medium representing short term memory of an intelligent robot immersed in an environment and receiving a stimulus from the environment, the data structure comprising:

a first field representing a direction;

a nearest neighbor list representing a pointer to a nearest neighbor direction; and

an event list including a pointer to an event data structure, the event data structure representing the stimulus received from the direction stored in the first field.

18. A method of identifying an event occurring in an environment surrounding an autonomous robot having a sensory processing module, each module configured to sense a characteristic of the environment, the event characterized by an event heading relative to the robot, the method comprising the steps of:

receiving from each module a signal representing the characteristic sensed by the module and a direction of the sensed characteristic;

storing each module signal in a short term memory according to the
    direction of the module signal;

identifying the event based on the module signal stored in the short term
    memory corresponding to the direction of the event heading.

5   19. An adaptive autonomous robot comprising:

means for interacting with the environment;

means for sensing an internal state of the robot;

means for sensing a characteristic of the environment;

a sensory ego sphere for representing an object based on the sensed

10   internal state and the sensed environment;

means for receiving data from an external source; and

means for representing the received data on the sensory ego sphere.